



MODULAR BATTERY MONITORING SYSTEM

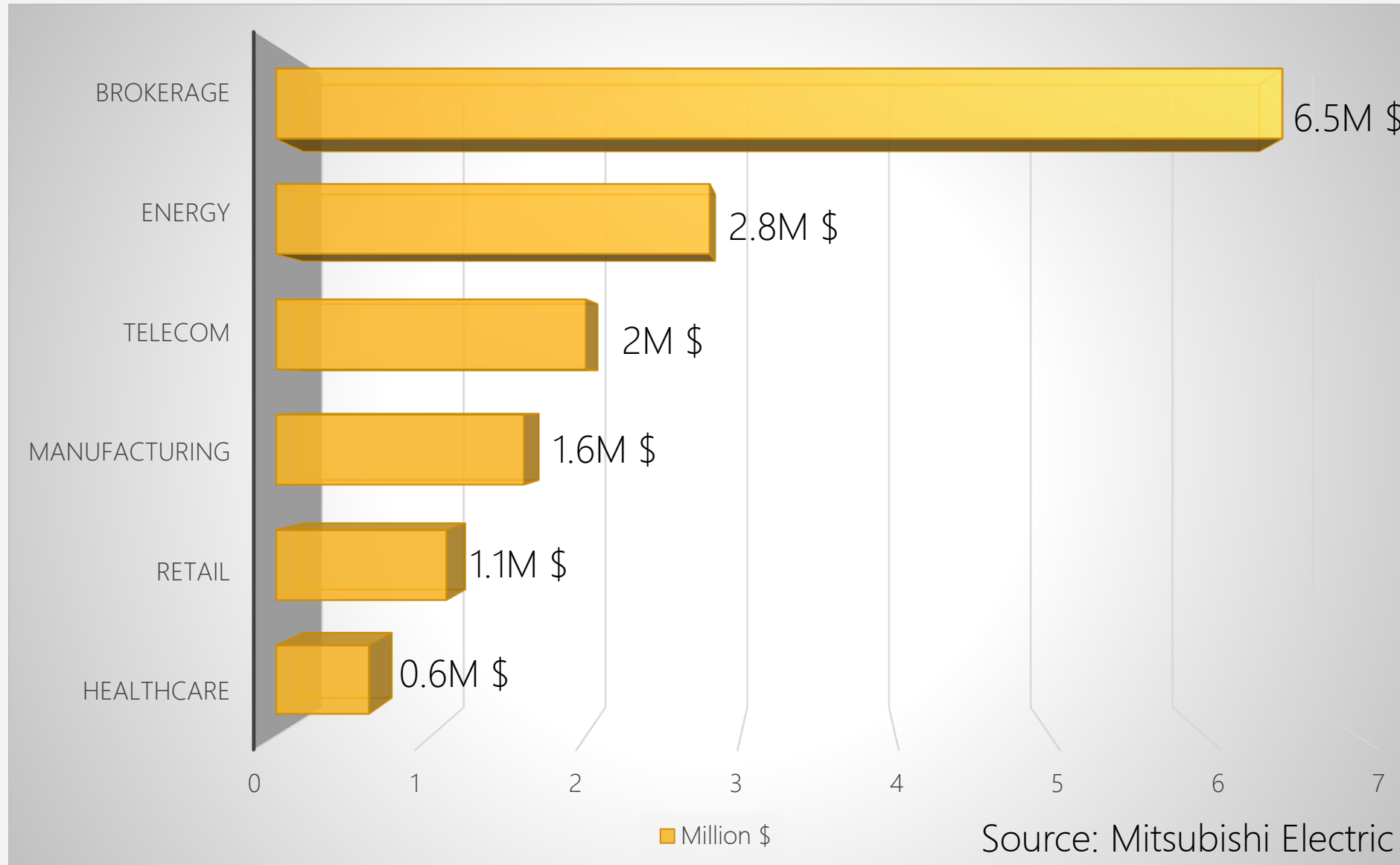
APPLICATION AREAS OF BATTERIES

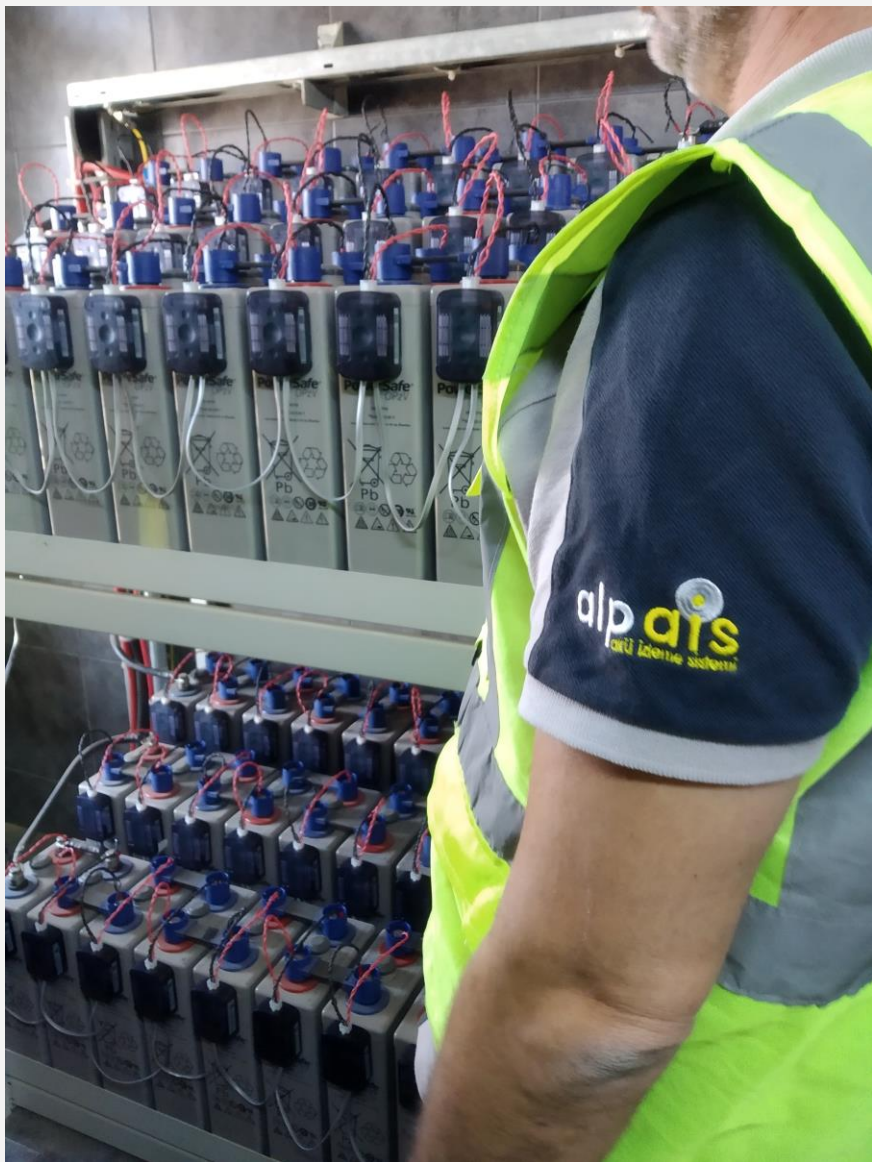
Batteries are used
in critical areas such as

- Data Centers
- Base Stations
- Hospitals
- Airports
- Industrial Fields



THE COST OF DOWNTIME

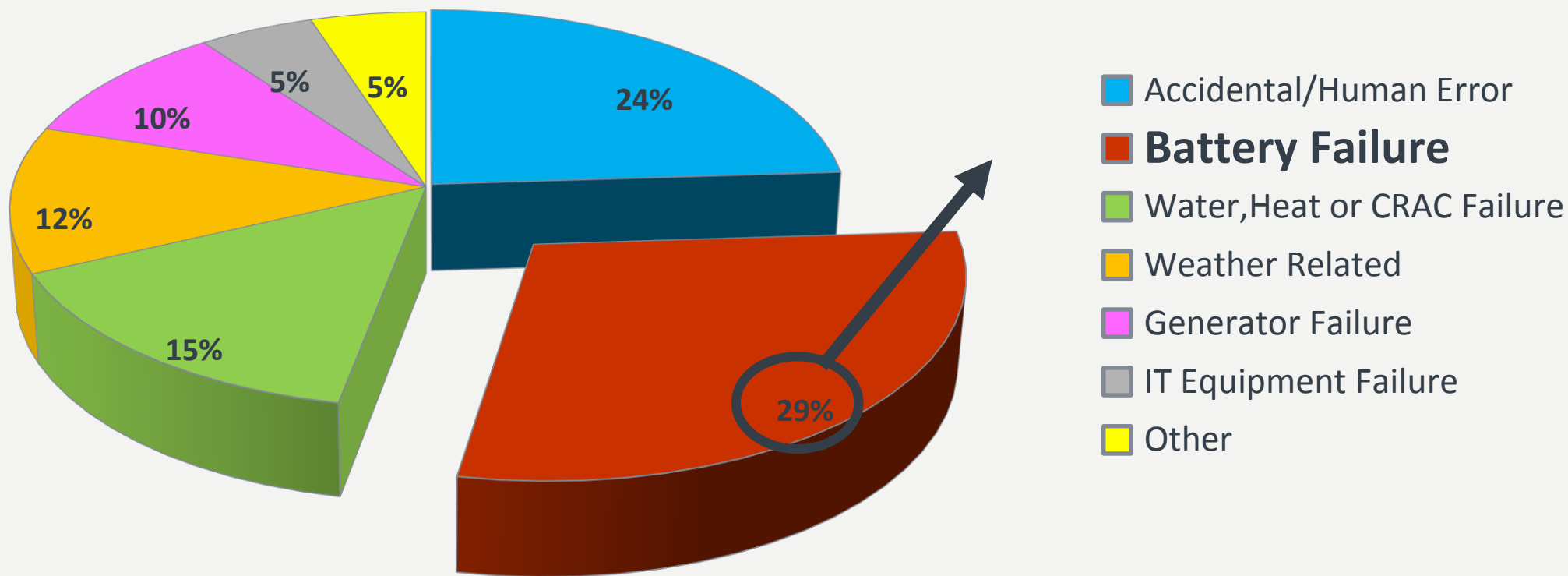




For Fortune 1000 companies:

- Average annual cost of unplanned downtime, \$1.25—\$2.5 billion
- Average hourly cost of infrastructure failure: \$100,000
- Average hourly cost of critical application failure: \$500,000—\$1 million
- Small to medium-sized businesses may be at most financial risk due to a limited ability to generate revenue during downtime.

UNPLANNED OUTAGES IN DATA CENTERS



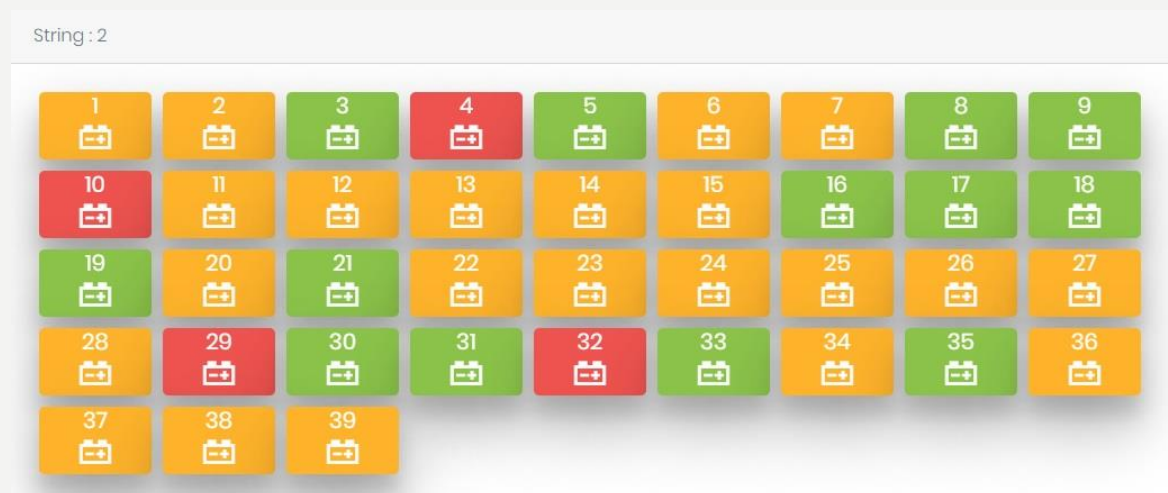
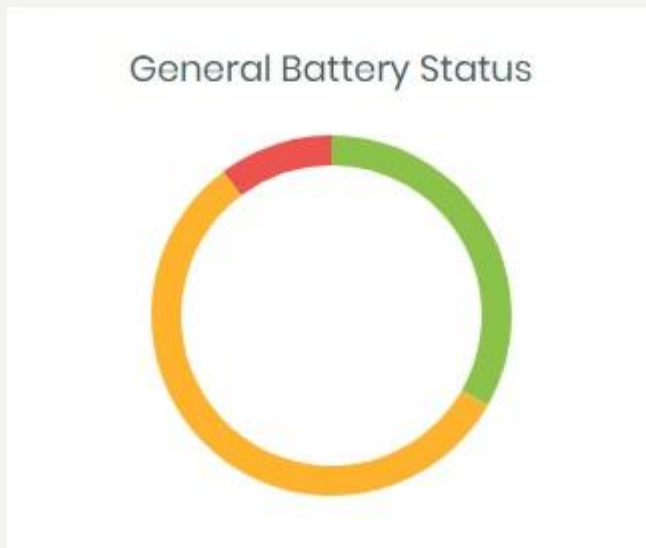
Source: Uptime Institute

WHY DOES THE BATTERY FAIL?

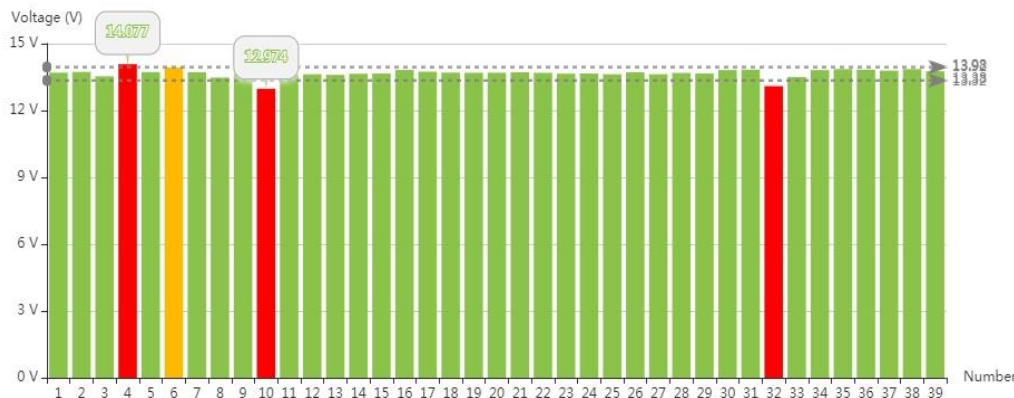
<u>Causes of failure</u>	<u>Value monitored with ALPAIS</u>
Aging	Internal Resistance, Ambient Temperature
Internal battery short circuit	Battery Voltage
Inaccurate float charge voltage	Float Charge Voltage
High battery temperature	Battery Temperature
High ambient temperature	Ambient Temperature
Abnormalities in charge / discharge currents	String Current, String Voltage

Source: EATON - The large UPS battery handbook

- To avoid unexpected consequences of battery systems;
- Battery Monitoring System is required!



Battery Voltage



String Values (Floating Charge)





BATTERY VOLTAGE

- The float charge voltage is critical to battery life. By measuring the battery voltage, short circuit detection, discharge performance and errors can be detected in advance.

STRING VOLTAGE

- The string voltage is monitored to verify that the charging system is on and charging properly.

STRING CURRENT

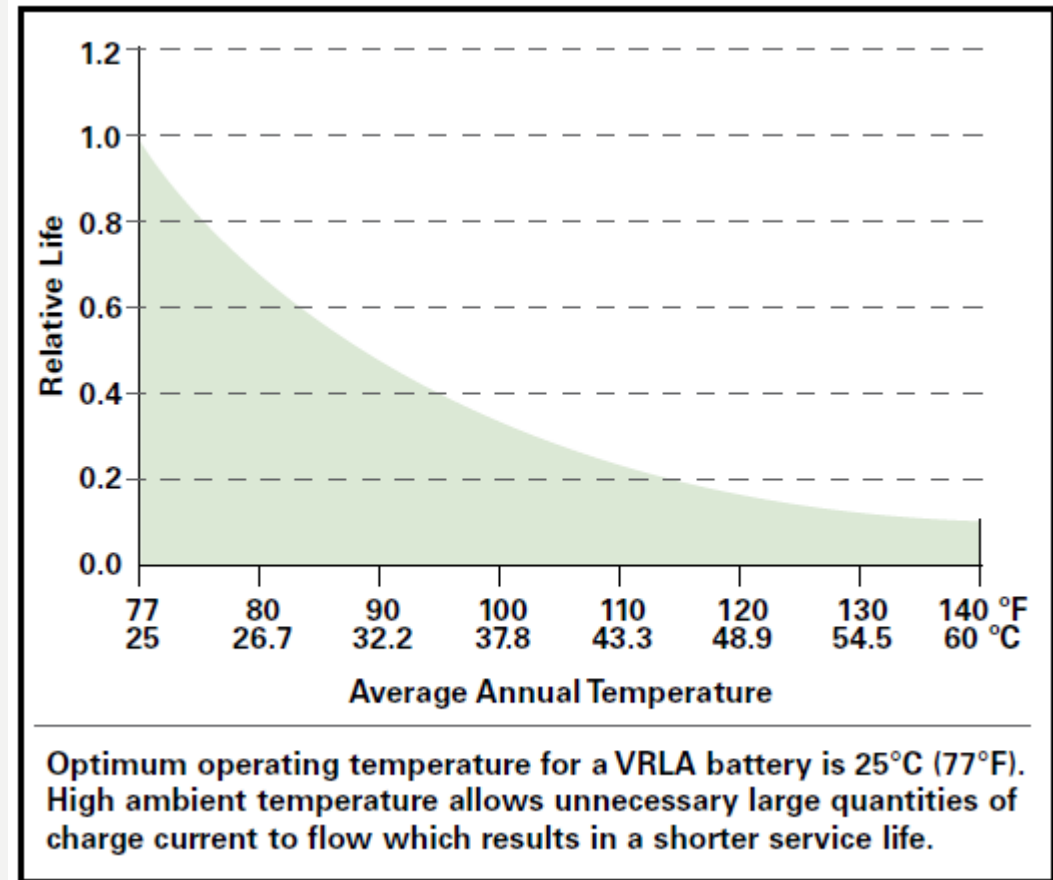
- By monitoring the string current, the amount of energy received or given for each string can be measured.

BATTERY TEMPERATURE

- The most important advantage of measuring the temperature of each battery is that it can be detected before thermal runaway occur and the necessary operation can be done.

AMBIENT TEMPERATURE

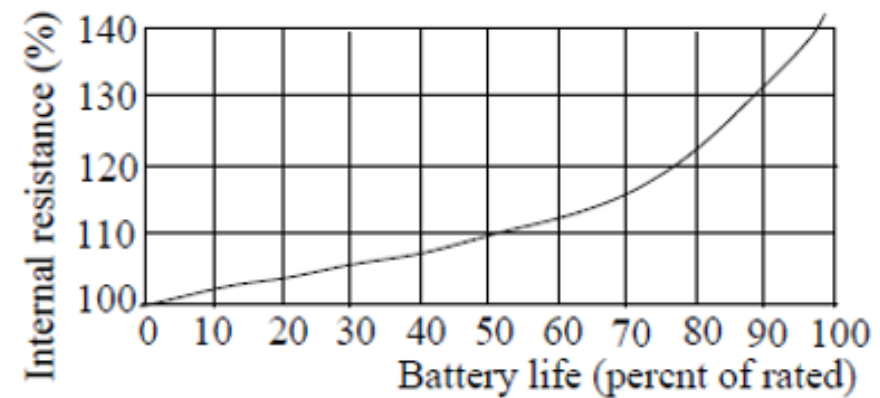
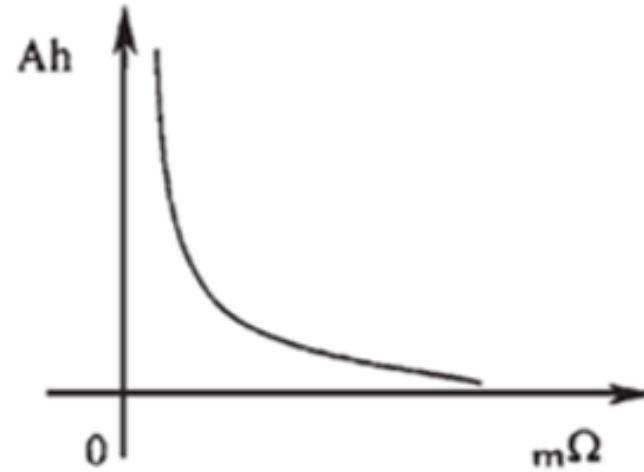
- For the VRLA The optimum temperature is;
20-25°C
- The service life of the batteries is between 20-25 ° C. This is because temperatures outside this range significantly affect the battery corrosion rate. It is important that the ambient humidity is not over 90% in terms of battery life.



Source: Eaton

INTERNAL RESISTANCE

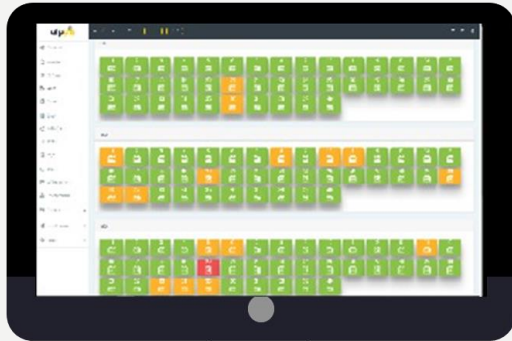
- It shows that there is a correlation coefficient of 0.88 between internal resistance and capacity, so the capacity can be reliably estimated by the internal resistance test.
- The advantage of the internal resistance method is that it has the least effect on the system for the batteries used on the line and can be accurately measured throughout the life of the battery.



BENEFITS OF BATTERY MONITORING SYSTEM

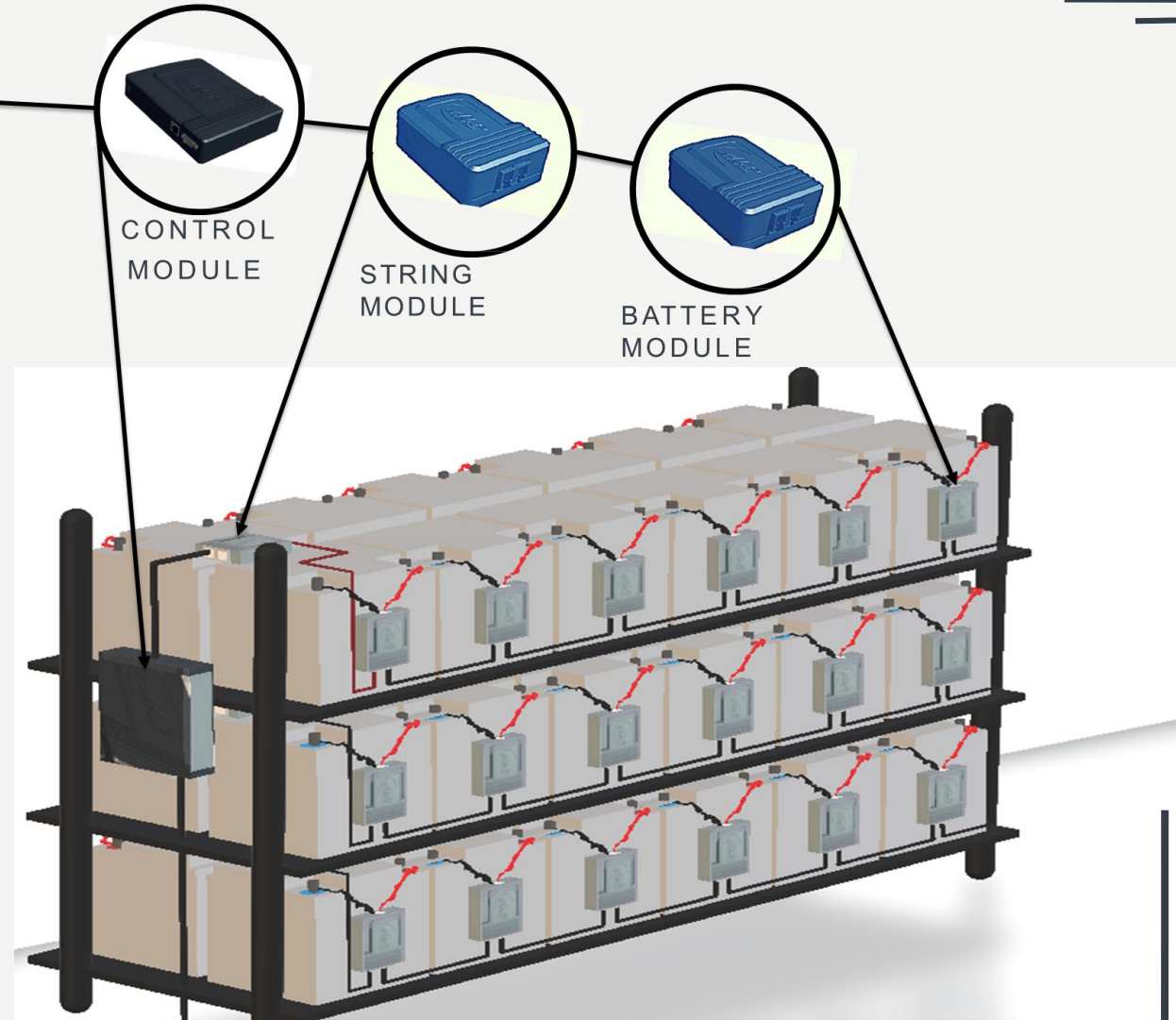
- It ensures planned battery purchases by preventing emergency situations by following the data received from AIS.
- Preventive activities are carried out with the AIS to ensure the continuity of business uptime.
- The remote access feature lets you manage and control your business from anywhere.
- It provides identification and verification of warranty status with recorded data and reporting. The performance of the batteries used is recorded annually.
- Thanks to the temperature sensors, it is possible to detect possible fire risks in advance. Along with the reduction in fire risks, premiums in insurance policies can be beneficial.
- Keeps your personnel away from battery racks / rooms and areas where sensitive operations are performed, ensuring their safety as well as continuing operations without hesitation.

ALPAIS SYSTEM COMPONENTS

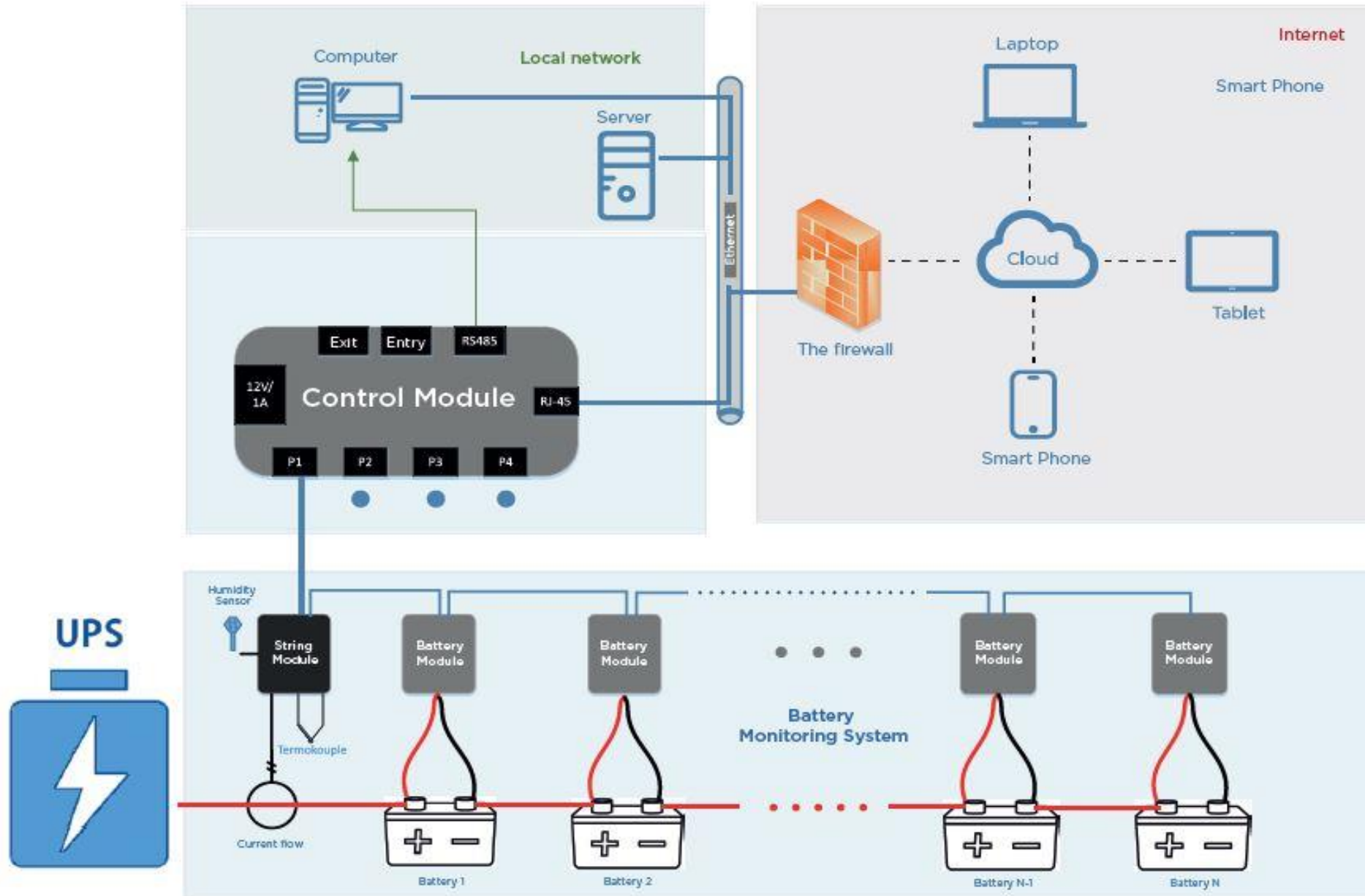


- Real-time Battery Statement
- Colourful Interface Notifications
- E-mail and SMS Notifications
- Multiple Location on One Main Control

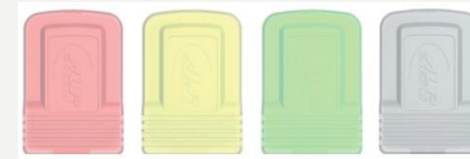
ALPAIS SOFTWARE



SYSTEM ARCHITECTURE



WHAT ARE THE DIFFERENCES OF ALPAIS?



- One Battery Module for each individual battery.
- Automatic software update for each Battery Module.
- Automatic addressing for each battery module.
- Battery and string parameters can be reported daily, monthly or yearly and exported in CSV format and graphically displayed on the interface in time axis.
- There are three different LED light sources on Battery Modules and String Modules for easy identification of faulty batteries and these LEDs can be easily seen by the user thanks to the semi-transparent cover in the module.
- No extra hardware required for SMS notification.
- Belonging to the same user is physically located in different systems, it can be monitored from a single point without requiring extra hardware and software costs.
- ALPAIS has Electromagnetic Compatibility (EMC) and Low Voltage Directive (LVD) test reports taken from accredited test laboratories.

TESTS & CERTIFICATES

akssert

SERTİFİKA

Alp Enerji Sistemleri Bilgi ve İletişim
Teknolojileri Hizmetleri San. ve Tic. Ltd. Şti.
Yalı Mah. Topsevli Cad. Mai Residence No:100-B Kat:15 Daire:128 Kartal İSTANBUL / TÜRKİYE

ISO 9001:2015

Kapsam: Ups, regülatör, invertör, redresör satışı, bakımı ve onarım sistem odası, data ve enerji
alt yapısı yapımı, bakım onarımı, kuru tip bakımsız akülerin satışı ve servisi
EA Kodu: 19-29

AKSSERT Denetim ve Belgelendirme Limited Şirketi bu belge ile adı geçen kuruluşun yukarıdaki standartlara uygun bir yönetim sistemine sahip olduğunu bildirir. Sistem etkin bir şekilde sürdürülmesi ve geliştirilmesi amacıyla yapılacak müdahaleler bu belge tarihinden itibaren 3 yıl boyunca geçerlidir. Belgelerin geçerliği için www.akssert.com, www.jas-anz.org adresleri, internet sayfalarından kontrol edilebilir. Bu belginin mülkiyeti hakkı AKSSERT Denetim ve Belgelendirme Limited Şirketi'ne aittir ve internetinde ifade edilmelidir.

AKSSERT Denetim ve Belgelendirme Ltd. Şti.

Sertifika Numarası : 57233
Belge Basım Tarihi : 08.10.2014

Yeniden Basım Tarihi : 07.10.2019
Geçerlilik Tarihi : 07.10.2020

Adres: Mustafa Kemal Mah. 215/13 Sokak No:5/7 Çankaya / ANKARA - TÜRKİYE
Tel: +90 312 284 99 44 (gün)
E-posta: info@akssert.com Web: www.akssert.com

FRM.122/02-21.08.2019/20.02.2017

ISO 9001 CERTIFICATE

Lvt
Test Laboratuvarları

LVT Test Laboratuvarları Ltd. Şti.
www.lvt.com.tr
Saray Modern Keresitler Sanayi Sitesi 4. Cadde No:9 Kazan / ANKARA
Tel: 0 312 815 13 25-26 Faks: 0 312 815 13 27

DENEY RAPORU
Test Report

AB-0341-T
19-0670-
R00-AN01-
01
04-19

1/46

Müşteri / Client : ALP ENERJİ SİST. BİL. VE İLET. TEKN. HİZ. SAN. TİC. LTD.
Adres / Address : YALI MAH. TOP SELVİ CAD. MAİ RESIDENCE NO:100-B DAİRE:128 KAT:15
PK:34873 KARTAL/İSTANBUL
İmalatçı / Manufacturer : ALP ENERJİ SİST. BİL. VE İLET. TEKN. HİZ. SAN. TİC. LTD.
Deney Numunesi / Test Sample : ALPAIS-B-ENV
Marka / Trade Mark : ALPAIS AKÜ İZLEME SİSTEMLERİ
Deney Metodu / Test Method : TS EN 61326-1:2013
EN 61326-1:2013
Deney Tarihi / Date of Test : 23.04.2019 - 28.05.2019
Toplam Sayfa Sayısı / Total Number of Pages : 46

Deney laboratuvarı olarak faaliyet gösteren LVT Test Laboratuvarları Ltd. Şti. TÜRKAK' tan AB-0341-T numarası ile IEC/ISO TS EN 17025:2013 standardına göre akredite edilmiştir.
LVT Test Laboratuvarları Ltd. Şti. accredited by TÜRKAK under registration number AB-0341-T for IEC/ISO 17025:2013 as test laboratory.
Türk Akreditasyon Kurumu (TÜRKAK) deney raporlarının tanınmasında Avrupa Akreditasyon Birliği (EA) ile Çok Taraflı Anlaşma ve Uluslararası Laboratuvar Akreditasyon Birliği (ILAC) ile karşılıklı tanıma anlaşmaları imzalanmıştır.
The Turkish Accreditation Agency (TÜRKAK) is a signatory to the European co-operation for Accreditation (EA) Multilateral Agreements (MLA) and to the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement (MRA) for the recognition of test reports.

Deney ve / veya ölçüm sonuçları, genişletilmiş ölçüm belirsizlikleri (talep halinde) ve deney metodları, bu raporun tamamlayıcı kısmı olan takip eden sayfalarda verilmiştir.
The test and/or measurement results, the uncertainties (if requested) with confidence probability and test methods are given on the following pages which are part of this report.

Mühür / Seal	Tarih / Date	Deney Sorumlusu / Person in Charge of Test	Laboratuvar Müdürü / Head of Testing Laboratory
	24/06/2019	Tarık DILMAÇ	Cahit GÖKSEL

Bu rapor, laboratuvarımızın yazılı izni olmadan kısmen kopyalanıp çoğaltılamaz.
This report shall not be reproduced other than in full except with the permission of the laboratory.
Testing reports without signature and seal are not valid.
FR1 50Rev01/0419

EMC TEST REPORT

UDEM

Ulusal Arası Belgelendirme Denetim Eğitim Merkezi
San. Ve Tic. A.Ş.
Mutlukent Mahallesi 2073. Sokak No:10 Ümitköy Çankaya-ANKARA

LVD DENEY RAPORU
LVD TEST REPORT

Sayfa(page) 1/80

Müşterinin adı/adresi / Customer name/address : ALP ENERJİ SİST. BİL. VE İLET. TEKN. HİZ. SAN. TİC. LTD.
Yalı Mah. Top Selvi Cad. Mai Residence No: 100-B Daire:128 Kat:15 PK: 34873 Kartal / İSTANBUL

İstek Numarası : 090419-02
Order No.

Nümunenin adı ve tarihi / Name and identity of test item : AKÜ İZLEME SİSTEMİ
BATTERY MONITORING SYSTEM

Nümunenin kabul tarihi / The date of receipt of test item : 09.04.2019

Açıklamalar / Remarks : DGC'ye, TS EN 61010-1 standardı uyarınca testler uygulanmıştır.
EUT has been tested according to TS EN 61010-1 standard.

Deneyin yapıldığı tarih / Date of Test : 10.04.2019-20.05.2019

Raporun sayfa sayısı / Number of pages of the Report : 80

Deney laboratuvarı olarak faaliyet gösteren UDEM, TÜRKAK'tan AB-1124-T ile TS EN ISO/IEC 17025 Nisan 2012 standardına göre akredite edilmiştir.
UDEM accredited by TÜRKAK under registration number AB-1124-T for TS EN ISO/IEC 17025 April 2012 as test laboratory.

Türk Akreditasyon Kurumu (TÜRKAK) deney raporlarının tanınmasında Avrupa Akreditasyon Birliği(EA) ile Çok Taraflı Anlaşma ve Uluslararası Laboratuvar Akreditasyon Birliği(ILAC) ile karşılıklı tanıma anlaşmaları imzalanmıştır.
The Turkish Accreditation Agency (TÜRKAK) is a signatory to the European co-operation for Accreditation (EA) Multilateral Agreement (MLA) and to the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement (MRA) for the recognition of test reports.

Deney ve /veya ölçüm sonuçları, genişletilmiş ölçüm belirsizlikleri (olmasa halinde) ve deney metodları bu raporun tamamlayıcı kısmı olan takip eden sayfalarda verilmiştir.
The test and/or measurement results, the uncertainties (if applicable) with confidence probability and test methods are given on the following pages which are part of this report.

Bu rapor, laboratuvara gönderilen numunelere uygulanan deney/deneyler sonucu hazırlanmıştır. Müşteriye ait diğer numuneleri kapsamaz.
This report was prepared according to test results of specimens sent to laboratory. It doesn't contain other specimens belonging to customer.

Mühür ve Tarih / Seal and Date	Deney Sorumlusu / Person in charge of test	Onaylayan / Approver
 24.05.2019	 Onur KESKİN	 Erhan Engin ERTAŞ

Bu rapor, laboratuvarımız yazılı izni olmadan kısmen kopyalanıp çoğaltılamaz. İmzasız ve mühürlü raporlar geçersizdir.
This report shall not be reproduced other than in full except with the permission of the laboratory. Testing reports without signature and seal are not valid.

LFM.21/03-26.12.2018/15.01.2016

LVD TEST REPORT



THANK YOU !

